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AUTHOR Stone, Elaine J.
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ABSTRACT

The effects of the fifth grade unit of the School Health Curriculum Project (SHCP) were investigated in a multicultural setting in Albuquerque, New Mexico. One of the purposes of the study was to design and test portions of an evaluation model that could be expanded and used by other school districts which are involved with SHCP. The second paper describes the effects of the unit on five areas related to health attitudes and behavior: locus of control, perceived vulnerability to illnesses and accidents; attitudes toward health concepts; self esteem; and attitudes toward smoking. SHCP was found to affect attitudes toward illness, going to the doctor, dental care, and smoking; but had minimal effect on locus of control, vulnerability to illness and accidents, or self esteem. Certain student characteristics--such as sex, ethnic group, income, and reading level--were associated with higher risks regarding preventive health behavior and smoking. Descriptions of tests used, criteria for assessing student growth, and sample management forms and records are appended. (Author/CTM)

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A REPORT OF AN EVALUATION DESIGN FOR THE SCHOOL HEALTH CURRICULUM PROJECT

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Elaine J. Stone, Ph.D., Principal Investigator

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PREFACE

A study of the effects of the fifth grade unit of the School Health Curriculum Project (SHCP) was conducted in a multicultural setting in New Mexico schools during the first six months of 1976. One of the purposes of the study was to design and test portions of an evaluation model that could be expanded and used by other school districts which are involved with SHCP.

This report contains an overview of the concept of evaluation, a description of SHCP, evaluation recommendations from a study conducted with the fifth grade unit of SHCP, a conceptual evaluation model for SHCP, and an application model with suggested implementation steps for school districts using SHCP.

This report was made possible in part by funds from the Bureau of Health Education, H.E.W.

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INTRODUCTION

An Overview of the Concept of Evaluation

Although the concept of evaluation is not new in education, perhaps never before has the demand for demonstrably effective relevant evaluation activities been so great. During the past fifteen years the practices of curriculum evaluators have emerged as a formal technology. As this technology has grown, changes in the philosophy underlying evaluation have also occurred. The changes reflect a considerable increase in the domain considered legitimate for investigation by the evaluator (Taylor & Cowley, 1972).

The history of curriculum evaluation can be divided into three eras. Prior to the 1930s, evaluation was considered synonymous with testing and measurement. The second era, from 1935 to 1957, was based in part on increased concern for the higher order cognitive and affective objectives and on a basic pattern of evaluation activities.

The final era of evaluation may be called post-Sputnik. This period is characterized by attempts to formalize a paradigm that would be applicable across many programs and projects. Sputnik triggered the profound realization that evaluation must be expanded to include the

educational process as well as the measurement of outcomes. This event of the late 1950s released massive financial support for new courses in science and mathematics that had to be evaluated for their effectiveness. Another event that was important in expanding the concept of evaluation was the passage of Title I of the Elementary and Secondary Education Act of 1965. This Act required that local school districts receiving funds had to evaluate the effectiveness of the program they conducted (Worton & Sanders, 1973).

There are many definitions of evaluation. Stufflebeam (1971) proposed the following definition for evaluation. "The process of delineating, obtaining, and providing useful information for judging decision alternatives" (p. 21). Several key points should be kept in mind regarding this definition:

1. Evaluation is performed in the service of decision-making, hence, it should provide information which is useful to decision-makers.
2. Evaluation is a cyclic, continuing process and must be implemented through a systematic program.
3. The evaluation process includes the three main steps of delineating, obtaining, and providing. These steps provide the basis for a methodology of evaluation.

If the definitions of evaluation from different authors

were presented for comparison, the theme that evaluation is an ongoing process and not just a terminal procedure to appraise the final outcome of a program would be common to all.

Scriven was the first person to use the terms "summative" and "formative" evaluation. An end of a program assessment would be considered summative evaluation. Formative evaluation, on the other hand, is almost exclusively aimed at improving the educational experience or product before and during the developmental phases. The key element in the formative technique is feedback (Payne, 1974).

It is frequently helpful to formalize a complex process, such as curriculum evaluation, into a model. The model will frequently take the form of a conceptual paradigm, flow chart, or other type of schematic presentation. In general, a model can aid in planning and implementing components of curriculum evaluation.

Figure 1 illustrates the usual steps in an evaluative process. The activities are in approximate order in terms of logic and temporal sequence. Only the major activities are shown and the assumption is made that decision-making is taking place both within and between blocks.

If applied logically and realistically, the process of curriculum evaluation can lead to decisions that serve

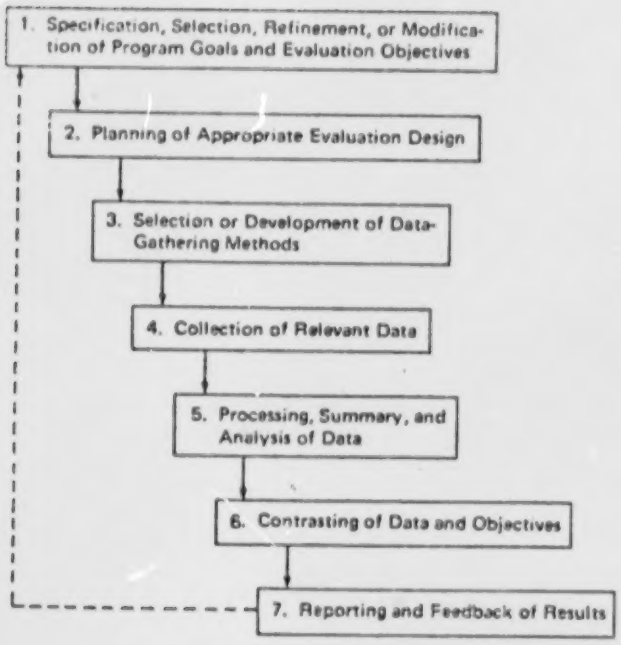
1. Specification, Selection, Refinement, or Modification of Program Goals and Evaluation Objectives
2. Planning of Appropriate Evaluation Design
3. Selection or Development of Data-Gathering Methods
4. Collection of Relevant Data
5. Processing, Summary, and Analysis of Data
6. Contrasting of Data and Objectives
7. Reporting and Feedback of Results

Fig. 1. Overview of the Usual Steps in the Curriculum Evaluation Process.

Source: Payne, David. Curriculum Evaluation. Lexington, Mass: D. C. Health and Company, 1974, p. 13.

as a powerful force to improve the various education programs in our schools. In educational assessment and decision-making, evaluation is the key way to make rational choices between alternative practices, to validate educational improvements, and to build a stable foundation of effective practices as a safeguard against faddish but inferior innovations.

A Need for an Evaluation Model for SHCP

The problem of evaluation in health education is more difficult than in many other subject areas because its desired outcomes are not as easily measured. We can administer tests that provide information about student success or failure in learning health facts, but information about health does not always affect a person's health behavior. Research studies indicate that there is a great difference between what an individual knows and what he or she does concerning his or her own health practices. Examples are the vast numbers of informed teachers, physicians, nurses, and students who smoke, overeat, drink excessively and exhibit other less than helpful health practices.

In health education in general, evaluation can be categorized into four areas: health behavior, health status, health knowledge, and health attitudes. During the past ten years health education curricula have not

always been developed to include an evaluation model. One such curriculum project developed in the late 1960s was the School Health Curriculum Project. The project has spread to over 240 school districts in the nation and is in need of a suggested evaluation model that could be adapted for use in local school districts. The following section contains a brief overview of the SHCP project as background information for understanding the evaluation model developed for SHCP.

SCHOOL HEALTH CURRICULUM PROJECT

Description of the School Health Education Curriculum Project

In 1967 the National Clearinghouse for Smoking and Health initiated the development of a health education project for the public schools directed at developing better understanding among students of their body systems and at motivating them toward protecting themselves from diseases. The program, originally called the Berkeley Health Project, has come to be known officially as the School Health Curriculum Project (SHCP) (Milne et al., 1975).

The Clearinghouse became interested in responsibility for teaching health maintenance and prevention of disease because of a concern for the growing number of youth who were beginning to smoke at young ages and the impact of such behavior on premature death and disability. This was an area of personal decision-making related to

health on which primary prevention education could make a substantial impact. According to Davis (1974):

> Surveys of teenagers made approximately every two years by the Clearinghouse indicate that the youth smoking problem is sizable. Every day about 3,200 youngsters between the ages of 12 and 18 take up smoking for the first time. This adds up to well over a million new smokers each year. Currently, there are probably some four million regular smokers in that age group (p. 1).

The SHCP is currently based in the Bureau of Health Education, Center for Disease Control, which is a branch of the U.S. Department of Health, Education, and Welfare. Since 1970, the project has been introduced in about 200 school districts in 28 states (Bureau of Health Education, 1976).

Some of the basic principles of the project are as follows:

1. Categorical health concerns such as smoking should not be approached as isolated subject matter, but should be part of a comprehensive approach to learning about effective living.
2. A health education curriculum should stimulate awareness of positive health concepts and help students to learn to assume responsibility for making sound decisions concerning personal and community health.

The original curriculum was designed for children in the fifth through seventh grades. A fourth grade unit was introduced in 1975. Each grade unit is organized

around the structure, function, interactions, and care of a body system. The fourth grade unit stresses energy, nutrition, and the digestive system, while the lungs and the respiratory system are dealt with at the fifth grade level. In the sixth grade unit the heart and circulatory system are features and the seventh grade focuses on the brain and nervous system (Bureau of Health Education, 1976). Units for kindergarten through third grade will be available in 1976 and 1977.

Each unit follows the same basic pattern of introduction, the relationship of each body system to the whole being, the structure and function of the system, the diseases to which it is subject, the prevention of these diseases, and a culminating phase to summarize the entire unit.

A number of basic strategies to effect change in school health education were defined, tested, and currently used in relation to the project. One strategy was the development of a teacher training model so teachers had an opportunity to learn the philosophy, objectives, activities, and materials for the grade level unit they would teach. To provide support for the teachers, the school administrators, nurses, and other curriculum support people also attended the training model.

> The idea behind the teacher training model is to first establish two successful classroom examples of each unit at its grade level in one

> school within a district. Subsequently, this team of trainees will work with their administrators to develop and conduct workshops to train other teachers in their district. Thus succeeding waves of teachers can be brought into the program, each group benefiting from the knowledge and experience of the first.
>
> During their training period the teachers go through the paces of the curriculum model, familiarizing themselves with both the course content and the equipment they will be using. Any experiments and demonstrations the children will be expected to do, the teachers learn to do first (Davis, 1974, p. 4).

Another strategy is a wide variety of carefully selected classroom teaching methods. Considerable emphasis is placed on student participation in individual and small group activities dealing with real life issues.

A third feature of the project deals with the availability of materials that relate specifically to the curriculum goals and objectives. These materials for the teachers include books, pamphlets, films, filmstrips, listening stations, models, slides, and charts. The resources come from a wide variety of commercial, official, professional, and voluntary organizations. School districts must provide the materials to participate in the SHCP program.

Another strategy is to gain initial support from school administrators and curriculum personnel so that the project can be phased into a school district's established education program. A school district is encouraged to start only in one or two classrooms the first year and then extend the model in subsequent years.

A report from the Bureau of Health Education (1976) stated:

> Various measures have been undertaken to assess its impact on knowledge, attitudes, and practices of people involved--including pupils, teachers, administrators, and parents. A variety of instruments and approaches have been used at both the national and local level to gather information. . . . While these efforts tend to be favorable, most are insufficiently objective to be reliable and valid as measures of the actual strengths, weaknesses, accomplishments and failures of the project (p. 4).

In 1975 a national study was completed in relation to the SHCP. This retrospective study involved fifth, sixth, and seventh grade students who were exposed to the three original curriculum units. Measurements of these students along with a matched sample of control students were taken. The findings revealed a difference between participation or nonparticipation in the curriculum two to five years earlier and present health knowledge related to the curriculum. Significantly more experimental students reported that they did not anticipate smoking five years after they had completed the unit than did a control population not exposed to the curriculum. Another finding was that the more units to which a student had been exposed, the stronger the attitude against cigarette smoking (Milne et al., 1975).

Cook and Olsen (1975) conducted a study to assess the cognitive effects of the sixth grade unit of SHCP on the cardiovascular health knowledge of selected sixth grade

students using a pretest-posttest design. The study involved approximately 300 students from four school districts. The results from the study indicated that the sixth grade SHCP unit exerted a positive effect on the cardiovascular health knowledge of students exposed to the project.

Another study conducted with the sixth grade level unit of SHCP was done by Redican (1976). The purpose of his study was to determine the effects of the sixth grade unit as implemented by a health education specialist and two classroom teachers, on the health knowledge, attitudes toward cigarette smoking, reading comprehension, and vocabulary scores of lower socio-economic black students. The study included classrooms from Chicago and New York. Results indicated that students receiving the SHCP unit achieved significantly higher posttest cardiovascular knowledge mean scores than did the control group students. The experimental group also achieved significantly higher post-test mean scores on the Teenage Self-Test on Smoking than did the control group of students.

Summary

The School Health Curriculum Project consists of four intensive units of study--one each at the fourth, fifth, sixth, and seventh grade levels with the units for kindergarten through third grade ready in 1976-1977. The

fifth grade unit is organized around the respiratory system and all that impinges on it.

This program has some distinctive characteristics such as teacher training, administrative and financial support, teaching resources, variety of teaching methods, and community and parent involvement. Several research studies have been conducted in relation to the project which have shown that the program has an effect on students' health knowledge, attitudes, and behavior.

A Study Involving the Effects of the School Health Curriculum Project

During January through May of 1976, a study was conducted to assess the effects of the School Health Curriculum Project (SHCP) and to formulate the theoretical base and practicel steps for the development of an evaluation model for this health education curriculum. The following is an abstract of the study. A more complete summary of the study is included in Appendix A.

Purpose

The major purpose of this study was to assess the effects of the School Health Curriculum Project (SHCP) on fifth grade students in five areas related to health attitudes and behavior. The areas were locus of control, perceived vulnerability to illnesses and accidents, attitudes toward health concepts and self-esteem, and attitudes

towards smoking. A secondary problem was to determine if relationships existed between variables such as sex, ethnicity, income, and reading level and the posttest results for the Treatment Group on the five measures used in this investigation.

Procedure

A quasi-experimental design was used. The specific design was an adaptation of a Nonequivalent Control Group Design modified by the addition of a Posttest-Only Control Group. The sample population participating in the study were 635 students representing 33 intact groups from a multicultural urban school district in New Mexico. The intact groups represented a treatment, a pre- posttest control, and post-test control. The treatment, which was the fifth grade unit of SHCP, was implemented by the classroom teachers who had attended 32 hours of workshop training.

The data collection instruments used for the pre-posttesting were the Nowicki-Strickland Internal-External Locus of Control Scale for Children (LC), the Gochman Perceived Vulnerability Instrument (PV), a Student Differential Health Concept Scale (SD_1) and Self-Esteem Scale (SD_2), and two subscales of the Teenage Self Test for Cigarette Smoking (ST). The statistics used to analyze the data included descriptive statistics, Pearson product-moment correlation, and analysis of variance. The unit of

measurement for the statistical analyses was each intact group's mean on the dependent variables.

Results

Findings revealed that the SHCP fifth grade unit had an effect on students' reported attitudes towards health concepts and attitudes towards smoking in the direction of the objectives of the curriculum. The secondary hypotheses findings indicated that significant differences existed among certain groups of students on posttest scores for the Treatment Group. There were significant differences between females and males on the PV and ST measures, between Spanish-American and Anglo students on PV and ST measures, between Title I and Non-Title I students on the SD_1 measure, and between students reading below grade level and those reading at or above grade level on the LC and ST measures.

Conclusions

1. A health education curriculum model such as the fifth grade unit of SHCP appears to affect students' self-reported attitudes toward being sick, going to the doctor, condition of their teeth, and smoking.
2. Expectancies to illness and accidents do not appear to change to any substantial degree after the educational treatment as represented by rankings on an instrument designed to measure general health expectancies

rather than expectancies specific to the respiratory system.

3. There were differences among the students on variables such as sex, ethnicity, income, and reading level on posttest results. These differences may have implications for locating high risk students in the area of preventive health behavior in general and especially in relation to smoking behavior.

SUGGESTED EVALUATION MODEL FOR THE SCHOOL HEALTH CURRICULUM PROJECT

Theoretical Base for the Model

Popham (1975) has devised four descriptive categories for the dozens of evaluation models available. The major categories are reflective or orientation of the various models. The four categories are:

1. Goal-attainment models
2. Judgmental models emphasizing intrinsic criteria
3. Judgmental models emphasizing extrinsic criteria
4. Decision-facilitation models

The evaluation model proposed for the SHCP could be classified in the goal-attainment models.

A goal-attainment model of educational evaluation views evaluation as the determination of the degree to which the instructional program's goals were achieved. The general approach involves the careful formulation of

educational goals according to an analysis of three goal-sources (the student, the society, and the subject matter) and two goal-screens (a psychology of learning and a philosophy of education). These goals are transformed into behavioral objectives which are measured to see if they are attained.

Tyler, Hammond, Metfessel, and Michael are a few of the educators who have developed goal-attainment models. The Metfessel and Michael model consists of eight steps:

1. Involve members of the total community
2. Construct broad goals and specific objectives
3. Translate specific objectives into forms that are communicatable and that facilitate learning
4. Develop measurement instruments
5. Carry out periodic measurement
6. Analyze measurement data
7. Interpret analyzed data
8. Formulate recommendations for program change or modified goals and objectives (Popham, 1975, p. 24).

Some of the elements in this model and the evaluation recommendations from the SHCP study conducted in New Mexico (Appendix A) will be used as a base to develop an evaluation model for SHCP.

The study conducted with SHCP in New Mexico in 1976 revealed the need to delineate multi-dimensional variables for evaluation in relation to SHCP. The categories of variables are as follows:

1. Instructional Program

    Organization
    Content
    Methods
    Materials
    Inservice
    Facilities
    Cost

2. People

    Students
    Teachers
    Administrators
    Nurses
    Curriculum Support Personnel
    Parents
    Community Agency Representatives

3. Learning Domains

    Cognitive (6/each)
    Affective (5/each)
    Psycho-motor

4. Assessment of Program Effects

    Short range effects
    Long range effects (longitudinal studies)

Application Model of Evaluation with Suggested Implementation Steps

Each step in the Evaluation Model for SHCP will be amplified in description in the following section.

Step 1: Identify direct and indirect involvement of school and community people as facilitators of program evaluation.

The people who could be involved as facilitators of program evaluation for SHCP would be students, teachers, administrators, school

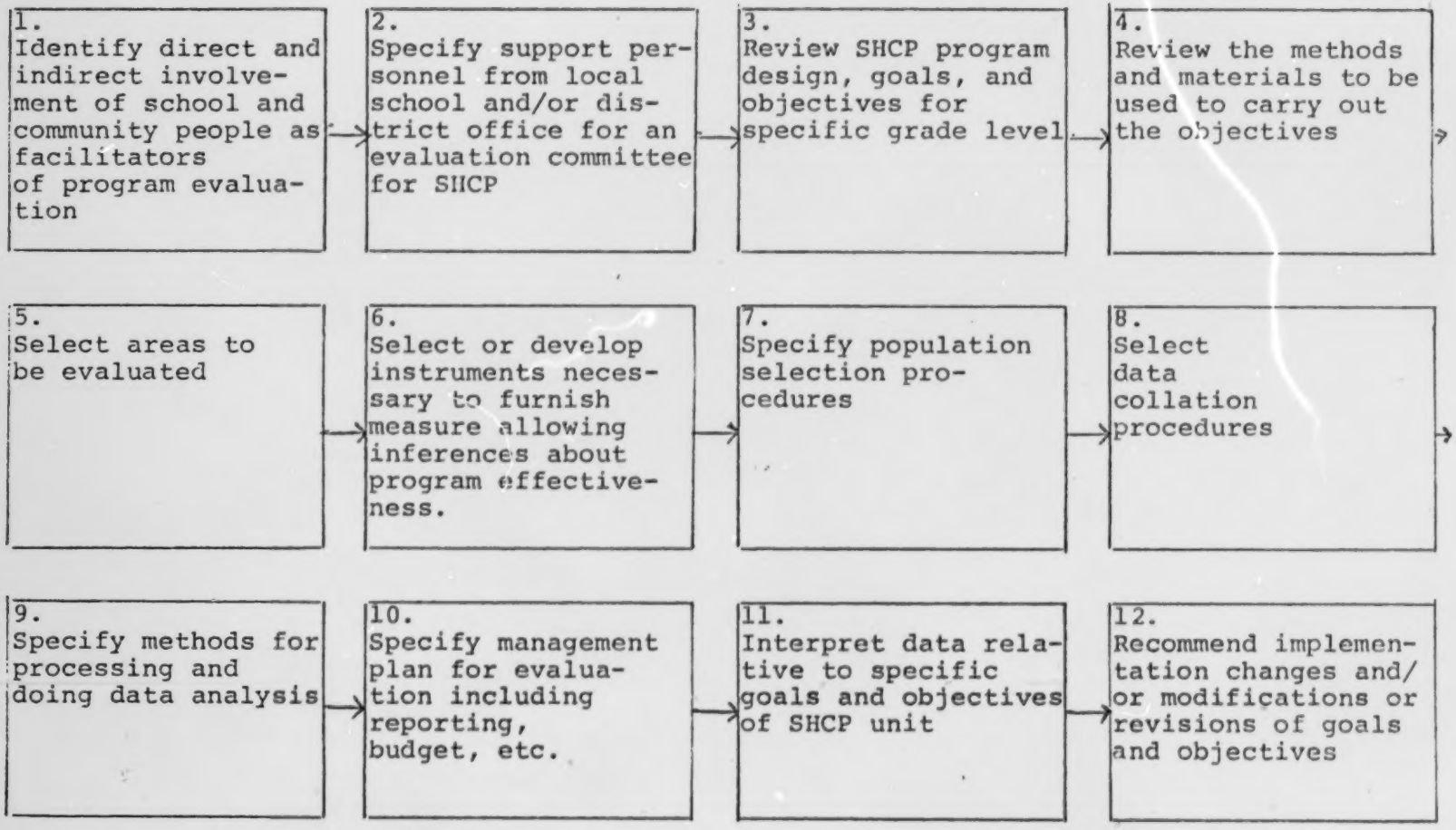
1. Identify direct and indirect involvement of school and community people as facilitators of program evaluation
2. Specify support personnel from local school and/or district office for an evaluation committee for SHCP
3. Review SHCP program design, goals, and objectives for specific grade level
4. Review the methods and materials to be used to carry out the objectives
5. Select areas to be evaluated
6. Select or develop instruments necessary to furnish measure allowing inferences about program effectiveness.
7. Specify population selection procedures
8. Select data collation procedures
9. Specify methods for processing and doing data analysis
10. Specify management plan for evaluation including reporting, budget, etc.
11. Interpret data relative to specific goals and objectives of SHCP unit
12. Recommend implementation changes and/or modifications or revisions of goals and objectives

Fig. 2. Evaluation Model for SHCP Unit Including 12 Steps in Evaluating the Project.

nurses and other curriculum support people, parents of students in the project, and community agency representatives involved in the project.

Step 2: Specify support personnel from the local school and/or district office for an evaluation committee for SHCP.

An evaluation team composed of teachers, the principal, the nurse, and the curriculum support people should be formed at each school involved in SHCP. The school project personnel should draw upon professional trained evaluators (hired by the larger school districts to help set up and carry out evaluation) if they are available in their school district.

Teachers and administrators who have not been trained in the skills necessary to evaluate instructional programs should be given extra training during the SHCP in-service training.

Step 3: Review SHCP program design and objectives for a specific grade level.

This step should be a review of the framework of goals and specific behavioral objectives arranged in hierarchical order from general to specific outcomes including the cognitive affective

and psycho-motor domains in the SHCP Unit. This step should also include a formulation of judgmental criteria for selecting relevant and significant objectives and for setting realistic priorities on the goals and objectives in terms of societal needs and expectations of the school, pupil readiness, availability of staff and material resources.

Step 4: Review the methods and materials to be used to carry out the objectives.

This will be covered in detail in the in-service training sessions.

Step 5: Select areas to be evaluated.

The method that could be used to determine areas to be evaluated is called "mapping." Mapping is an analytic technique which assists program evaluators in sequence and planning the tasks to be undertaken during the evaluation effort. Mapping enables the division of each question or objective into its elements. Definitions for categories on the sample mapping sheet (see Appendix B) are listed as follows:

STATEMENT OF ITEM: *Each question and each objective should be stated. The same formats should be used to map each item.*

DATA ELEMENTS: *All that information necessary for answering a question or assessing the objective should be listed. If a data base is to be established, forms should be shown.*

INSTRUMENTATION: *For each data element listed, the instrument used to collect data should be given as well as administration dates.*

SAMPLING: *For each instrument given, sampling techniques should be explained, e.g., size, population.*

DATA COLLECTION AND REDUCTION TECHNIQUES: *For each element, data handling information should be explained. This includes who collects the data, who "scores," etc. Keypunching formats should be included if applicable.*

SUPPORT REQUIREMENTS: *Any additional help or services necessary to complete evaluation of each item should be listed. This column might also be used for comments, special instructions, etc.*

Step 6: Select/or develop instruments necessary to furnish measures allowing inferences about program effectiveness.

The evaluators should select and/or construct a variety of relatively objective tests, scales, and indices furnishing measures from which inferences can be drawn concerning the degree to

which cognitive and noncognitive objectives have been attained. Metfessel and Michael (1967) have developed very useful multiple-criterion measures for evaluation of school programs. The five areas are very helpful in suggesting the variety of evaluation measures that could be selected for SHCP (see Appendix C).

Step 7: Specify population selection procedures.

To be covered during in-service.

Step 8: Select data collation procedures.

To be covered during in-service.

Step 9: Specify methods for processing and doing data analysis

To be covered during in-service.

Step 10: Specify management plan for evaluation including reporting timeline, budget, etc.

It is helpful in programs planning and evaluation if a systems approach is used through such techniques as Management by Objectives, PPBS, PERT, CPM for the SHCP project. Suggested samples of budget sheets and timelines are in Appendix D.

Step 11: Interpret data relative to specific goals and objectives of SHCP unit.

Interpret the data in terms of certain judgmental standards and values concerning what are considered desirable levels of performance on the totality of collated measures--the drawing of conclusions which furnish information about the direction or growth, the progress of students and the effectiveness of the total program.

Step 12: Recommend implementation changes and/or modifications or revisions of goals and objectives.

Formulate recommendations that furnish a basis for further implementation, for modifications, and for revisions in the broad goals and specific objectives so that improvement can be realized--recommendations which for their effectiveness depend upon adequate feedback of information to all individuals involved in the project.

APPENDIX A

THE EFFECTS OF A PROTOTYPE HEALTH EDUCATION CURRICULUM MODEL ON LOCUS OF CONTROL, PERCEIVED VULNERABILITY, AND HEALTH ATTITUDES OF FIFTH GRADERS

Elaine J. Stone, Ph.D., M.P.H.
Assistant Professor
Division of Health Education
The University of New Mexico

This paper was presented before the Research Council at the 50th Annual Convention of the American School Health Association, New Orleans, Louisiana, October 7, 1976.

INTRODUCTION

According to the President's Committee on Health Education (1973), most major causes of death in this country could be prevented if the American public would change its smoking, drinking, eating, and exercise habits. It was the opinion of the President's Committee that advances in improving the nation's health in these areas will need to result from personally initiated actions that are directly influenced by an individual's health related attitudes, values, beliefs, and knowledge. School health Education can make vital contributions in areas such as these and can play an important role in improving the quality of life in relation to health status.

The effectiveness and even the existence of health education in the classroom, however, vary greatly throughout the country. All too frequently existing programs are not assessed for their effects on students in relation to possible determinants of health behavior.

Numerous health educators, behavioral scientists, and health organizations have stated and currently support the position that education efforts during the elementary school years warrant special attention to assist children in developing decision making skills in relation to health

behavior (American Cancer Society, 1975; American School Health Association, 1975; Creswell, Huffman, & Stone, 1970; Hochbaum, 1970; Johns, 1959; Leventhal, 1973).

The school, as one institution in society, can provide students with learning experiences that help them develop attitudes, values, and beliefs needed to use information in making health decisions (Governali, 1974). There are several school health education curriculum models that contain programs for the elementary school level. These stress the development of decision making skills regarding health behaviors and stress the physical, mental, and social dimensions of health. One such curriculum model is the School Health Education Study (SHES) which uses a conceptual approach to health education for kindergarten through twelfth grade.

Another curriculum model, the one addressed in this study, is the School Health Curriculum Project (SHCP). This program was developed with support from the National Clearinghouse for Smoking and Health because of the concern for the growing number of youth who were beginning to smoke at young ages. The SHCP Model consists of four units of study--one each at the fourth, fifth, sixth, and seventh grade levels. Each unit is organized around a body system and all that impinges on it.

Assessments of the effects of the SHCP curriculum model on students' health knowledge, attitudes, and behavior

have been reported by Cook and Olsen (1975), Milne, Marshall-Miles, and Coleman (1975), and Redican (1976). The findings from these studies suggest that SHCP affects students' health knowledge, attitudes, and behavior related to a positive health status.

The model has never been assessed for its possible effects on other variables such as locus of control, a concept which describes the degree to which individuals believe that reinforcements are contingent upon their own behavior, and perceived vulnerability to illnesses and accidents, which refers to the subjective risks of being susceptible to contracting a health condition. Both the locus of control and the perceived vulnerability variables are reported to be determinants of health attitudes and behavior in adults (Rosenstock, 1974b) and could have important implications for health education curriculum development and implementation for the early school years.

PURPOSE

Major Problem

The major purpose of this study was to assess the effects of the School Health Curriculum Project (SHCP) in five areas related to health attitudes and behavior: locus of control; perceived vulnerability to illnesses and accidents; attitudes toward health concepts; attitudes toward self-esteem; and attitudes toward smoking. Subjects

were students enrolled in 12 schools in a multi-cultural urban setting in New Mexico.

Secondary Problems

Hypotheses were also tested related to secondary analyses important to the study. These hypotheses were made to determine if there were differences among groups of students exposed to SHCP on biographical variables such as sex, ethnicity, income, and reading level in relation to locus of control, perceived vulnerability to illnesses and accident, attitudes towards health concepts and self-esteem, and attitudes toward smoking.

SIGNIFICANCE

The importance of health education as a necessary curriculum area in the total process of education has been acknowledged by educators and health related professionals (Leventhal, 1973; Oberteuffer, Harrelson, & Pollock, 1972). Objective assessment of all learning outcomes from health education programs is needed as was suggested by Johns in the School Health Education Evaluation Study (1959). Rosenstock (1974a) also feels that any program that might affect the determinants of health related habits needs investigation.

Previous research on adults indicated that persons with a high degree of perceived internal locus of control

also have high levels of potential health behaviors such as getting immunizations, not smoking, using birth control methods, and seeking preventive check-ups such as Pap smears and visits to the dentist (Flach, 1970; Gray, 1966; Kegeles, 1963; Phares & Wilson, 1972; Straits & Sechrest, 1963). Internal subjects report that they see themselves as possessing specific ability to prevent or avoid health problems. This information makes it reasonable to ask, does the SHCP Model affect the locus of control of children? It is also reasonable to ask how the SHCP Model affects students' self rated perceptions of their vulnerability to illnesses and accidents. The Health Belief Model, formulated in the early 1950s included perceived susceptibility or vulnerability to health problems as an important element in predicting health behavior (Rosenstock, 1974b).

Research studies have indicated that there are a number of psychosocial variables associated with all health behavior (Allegrante, O'Rourke, & Tuncalp, 1975; Hochbaum, 1970). The current investigation contributed to the data base on the effects of an educational program on several psychosocial variables that might be related to preventive health behavior.

METHODS AND PROCEDURES

Subjects

Subjects for the study were fifth grade students enrolled in the Albuquerque Public Schools during the

1975-76 school year. The population served by the participating schools represented mixed socio-economic and ethnic groups. A total of 635 students representing 33 intact groups from 12 schools participated in the study. The sample of 635 students represented 10% of all the fifth graders in the Albuquerque Public School district.

As shown in Table 1, the average student who participated in the study was male or female, 10 or 11 years of age, and of Anglo or Spanish-American ethnic background. The average student's family income was above Title I guidelines and the reading level was at grade level or above.

(Insert Table 1 here)

For this study the unit of measure was the intact group which was a single classroom of students, but in some instances it represented a group of students composed of more than one classroom. For the treatment intact groups, the students were grouped according to how they were taught the major portion of the SHCP unit.

The intact groups were divided into three clusters: (1) Treatment (2) a pre-posttest control (Control Group I), and (3) posttest only control (Control Group II). The Treatment Group represented 24 intact groups from eight schools. Control Group I represented five intact groups from two schools while Control Group II represented four intact groups also from two separate schools. There were

not enough available schools in the specified geographic area of the study not participating in the SHCP program to select as many control intact groups as treatment intact groups.

Instruments

A total of four instruments were employed. A group of 100 students representing seven intact groups from two Albuquerque schools participated in the pilot testing of the procedures and instruments. The groups were selected because their characteristics were similar to those groups participating in the study.

The Nowicki-Strickland Internal-External Locus of Control Scale for Children was used for this study to measure locus of control (Nowicki & Strickland, 1973). This questionnaire was a 19-item internal-external locus of control instrument developed for grades three to six from the complete 40-item NS-IE instrument. An example of one of the questions was, "Do you believe that most kids are just born good at sports?" Students were instructed to select a yes or no response. A high score denoted an external orientation and a low score indicated an internal orientation.

The Gochman Perceived Vulnerability Instrument (Gochman et al., 1972) was modified slightly and used to measure students' expectancies of health problems based

on their responses to a series of 14 questions. The expectancies were related to a bad accident, a rash, a fever, having a tooth pulled, a sore throat, a toothache. a cold, bleeding gums, an upset stomach, missing a week of school because of sickness, a cavity, a bad headache, and cutting a finger accidentally. An example of one of the questions was, "What chance is there of your catching a cold during this next year?" For each question students were instructed to select one response from five alternatives that best expressed their expectancy. The response choices were no chance, almost no chance, a medium chance, almost certain, or certain. The responses were scored from 1 for the no chance alternative to a maximum of 5 for a response of certain. A total scale score was computed for each student with a minimum score of 14 and a maximum score of 70. A high score represented a stronger level of perceived vulnerability than a low score.

Two subtests from the Teenage Self Test for Cigarette Smoking were used to measure knowledge and attitudes involving adolescents and cigarette smoking. The test was developed by Education and Public Affairs, a private testing firm in Washington, D. C. (Milne & Coleman, 1973). The two subtests used were the Health Concern and Costs subtest and the Rationalization subtest. Each subtest contained five statements with Likert Scale responses. An example of one of the statements was, "It's okay for

teenagers to experiment with cigarettes if they quit before it becomes a habit." The students were instructed to select one response from three alternatives that best expressed their attitude. The response choices were agree, neither agree nor disagree, or disagree. The responses were scored 5, 3, and 1, respectively. A total scale score was computed for each student with a low score representing attitudes in the direction of a nonsmoker.

A Semantic Differential Health Concept and Self-Esteem Scale was developed by the investigator to measure each student's attitudes toward health related concepts and self-esteem. The six items in the instrument were as follows:

1. What I think about being sick?
2. What my friends think about me?
3. What I think about going to the doctor?
4. What I think about my teeth?
5. What I think about myself?
6. What I think about school?

Items 1, 3, and 4 made up a subscale (SD_1) dealing with health related concepts and items 2, 5, and 6 made up a subscale (SD_2) dealing with self-esteem.

The student responded to a set of six evaluative bipolar adjectives to measure connotative attitudes toward each item. The bipolar adjectives selected have been shown to be the most reliable for children's ratings (Osgood, Suci, & Tannenbaum, 1975). Every other set of bipolar adjectives was reversed to avoid a simple response

set on the part of a student. A five point scale was assigned to each set of bipolar adjectives. This made the possible total score for each item a minimum of six and a maximum of 30 points. The higher the individual's rating on a concept, the more positive was his attitude.

Design

A quasi-experimental design was employed. The design was an adaptation of the Nonequivalent Control Group Design (Campbell & Stanley, 1966) which was modified by the addition of a Posttest Only Control Group (see Figure 1). Every student within each intact group was tested.

Group	Pretest	Treatment	Posttest
Treatment Group	O_1	X	O_2
Control Group I	O_1	(X)	O_2
Control Group II		(X)	O_2

Figure 1. Design of the study.

This design allowed for research conducted on groups constituted of naturally assembled collectives of subjects such as those employed in this study. The addition of the unmatched or nonequivalent control groups reduced equivocality of interpretation over results obtained using no control.

In this design the O_1 represents the five instruments administered for pretesting and O_2 represents the same instruments but for posttesting. As shown in Figure 1, the Treatment Group and Control Group I received both pretesting and posttesting while Control Group II was posttested only. The X represents the treatment which was the administration of the fifth grade unit of the School Health Curriculum Project (SHCP). The parenthetical (X) is the graphic convention of indicating that the control groups received no treatment but did receive their regular classroom instruction.

All the pretests were given to the treatment intact groups within a 1 to 7 day time period before the treatment. Following the pretesting, the treatment of the SHCP was administered for approximately 12 weeks. Posttests were given 1 to 10 days after the completion of the treatment. The pretesting and posttesting for the control groups were administered during the same time frame as was used for the treatment group.

The effect of testing was studied in two ways in this design. The first way was by adding Control Group II and giving them only posttests. The posttest scores were then observed to see if there was a significant difference between Control Group I and Group II. There were no significant differences between Control Group I or II on any of the measures. Since it appeared that testing alone

had no effect, the two sets of control groups were combined into one control group for subsequent analyses. This increased the control N to nine intact groups. The second method used to study the effect of testing was to look at differences between pre- and posttest scores for Control Group I. No differences emerged so it appeared testing had no effect.

The design used in this study can be regarded as controlling for six difference classes of extraneous variables relevant to internal validity. The variables were history, maturation, selection, mortality, testing, and instrumentation (Campbell & Stanley, 1966). In regard to external validity the addition of Control Group II controlled for the interaction of testing and the treatment. Generalizability of the results must be interpreted with caution since preexisting intact groups were utilized with no opportunity to assign subjects or treatments randomly.

Experimental Procedures

This phase involved the data collection. The pretesting for the Treatment and Control Group I was completed. The SHCP unit was administered to the Treatment Group, and posttests were given to all the intact groups.

The Treatment Group was pretested one to seven days before the SHCP unit began depending on scheduling arrangements with the principals and teachers. During the pretesting

sessions, the Locus of Control, Gochman Perceived Vulnerability, Teenage Self Smoking Test, and the Semantic Differential were administered during one 45 minute block of classroom time in the regular school setting. The order of the instruments' presentation was rotated for every treatment and control group within a given school by using a predetermined system of rotation. This was done to balance the possible effect of the order of the instruments on student responses. Although all the pretests were administered by the investigator, the regular classroom teachers assisted in distributing the precoded test packets to the students and were requested to be present during the testing periods. Standardized instructions were given to each group before the pretesting. Two examples of test items displayed on a poster board were demonstrated to a group before the administration of an instrument. All pretesting for the treatment groups was done between January 8 and January 30, 1976.

Following the pretesting, the regular teachers taught the fifth grade unit of SHCP to their students. Prior to the experimental phase of the study, each teacher had received 32 hours of in-service training on the SHCP unit from a team composed of two classroom teachers, a school nurse, and a principal.

The average length of time for teaching the SHCP unit was approximately 12 weeks with the range being 10 to

15 weeks. The average time spent on the unit in the schools was six hours a week with the range of 4 to 10 hours. Personnel from each school determined the time format of the SHCP unit for their respective school.

Posttesting was conducted one to 14 days after the unit was completed. As in the pretesting, the posttesting had to be scheduled according to the principals' and teachers' preference. All posttesting for the treatment schools was conducted during April 17 to May 3, 1976.

The Control Group I (pretests and posttest) groups were pretested during January 17 to February 10, 1976, and posttested from April 7 to April 21, 1976. All testing followed the same procedures used in the Treatment Group for pre- and posttesting.

The Control Group II (posttest only) groups were tested during April 30 to May 11, 1976. Testing procedures for the posttest were the same as those for the other groups.

The teachers for each intact group at the treatment and control schools were asked to provide information on ethnic group and reading level for each student who participated in the testing. Students indicated their sex and age by marking appropriate spaces provided on the Locus of Control instrument. All of this information was gathered during pretesting sessions except for the intact groups who were given posttests only. For these four

groups the information was gathered at posttesting and age and reading levels were adjusted to pretesting dates.

Data Analysis

Data analysis included descriptive statistics, Pearson product-moment correlation, and analysis of variance. While emphasis was placed upon the testing of hypotheses associated with the major questions raised, additional hypotheses of interest were also tested. The major hypotheses were tested at the .05 level of significance for two-tailed testing. The secondary hypotheses were tested at the .10 level of significance since they were exploratory in nature in the area of the behavior sciences (Winer, 1962). The unit of measurement for the statistical analyses was each intact group's mean score on each of the dependent variables.

RESULTS

The major hypotheses stated there would be a significant difference between treatment and nontreatment groups for each of the following variables:

1.1 Locus of Control (LC)

1.2 Perceived Vulnerability (PV)

1.3 Semantic Differential for Health Concepts (SD_1)

1.4 Semantic Differential for Self-Esteem (SD_2)

1.5 Teenage Self Smoking Test (ST).

Analysis of Variance on Pretest Results for the Treatment and Combined Control Groups

An analysis of variance was used for pretest results to determine if the groups were significantly different before the treatment. No significant differences were noted between pretest mean scores between the two groups on four of the measures: PV, SD_1, SD_2, and ST. A significant difference was noted between the Treatment and Control Group I on the LC measure. Thus, posttest interpretations on this variable should take this difference into account. As shown in Table 2, the Treatment Group was more external on the pretest with a mean of 8.23 as compared to Control Group I which had a mean of 6.72.

(Insert Table 2 here)

Analysis of Variance on Posttest Results for the Treatment and Combined Control Groups

An analysis of variance was employed for posttest results to determine if there were significant differences between the Treatment and Combined Control Group on any of the five measures. Two of the five measures were supported. Significant differences were noted for the Semantic Differential Health Concepts Scale and the Smoking Test measures. The F values for Locus of Control, Perceived Vulnerability, and Semantic Differential Self-Concept Scale were not significant. Table 3 contains a summary of the findings.

(Insert Table 3 here)

Rankings of Expectancies to Illnesses and Accidents on the Perceived Vulnerability Instrument

Table 4 illustrates the rankings for expectancies of illnesses and accidents for the Treatment Group on the PV pretest while Table 5 portrays the rankings on the PV posttest.

(Insert Table 4 and 5 here)

The expectancy scores for each item range from one for the lowest ranking to five for the highest ranking. Findings on the pretest and posttest mean scores indicated students felt that missing a week of school because of illness, having a bad accident like breaking an arm, and getting a rash were the problems least likely to occur. Getting an upset stomach and a headache were ranked as the most likely to happen to them. As can be observed, the other expectancies such as a cold and cutting a finger changed in ranking to some degree from pre- to posttest. The rankings supported Gochman's research findings with students in the Midwest (Gochman et al., 1972).

Secondary Analyses

In addition to the major hypotheses, findings from the secondary hypotheses were of interest. The secondary hypotheses stated there would be a significant difference

CONCLUSIONS

The findings from this study lead to the following conclusion:

1. A health education curriculum model such as the fifth grade unit of SHCP affects students' self-reported attitudes toward being sick, going to the doctor, condition of their teeth, and smoking.
2. A health education model such as the SHCP which is taught for approximately 12 weeks appears to have no significant effect on students in the areas of locus of control, perceived vulnerability to illnesses and accidents, or self-esteem. However, differences in the means and a decrease in variability on the LC and SD_2 from pretests to posttests for the Treatment Group may indicate that the SHCP treatment had some minimal effect on these areas.
3. Expectancies to illness and accidents do not appear to change to any substantial degree after the educational treatment as represented by rankings on an instrument designed to measure general health expectancies rather than expectancies specific to the respiratory system.
4. There were differences among the students on variables such as sex, ethnicity, income, and reading level on posttest results. These differences may have implications

between male and female students, Spanish-American and Anglo students, Title I and Non-Title I students, and students reading at or above grade level and students reading below grade level in the treatment group on posttest mean scores for each of the following variables:

1.1 Locus of Control

1.2 Perceived Vulnerability

1.3 Semantic Differential for Health Concepts

1.4 Semantic Differential for Self-Esteem

1.5 Teenage Self Smoking Test.

Analysis of Variance on Posttest Results for the Treatment Group on the Variables of Sex, Ethnic Group, Income, and Reading Level

Findings indicated that significant differences existed among certain groups of students on posttest scores. There were significant differences between females and males on the Perceived Vulnerability and Smoking Test measures, between Spanish-American and Anglo students on the Perceived Vulnerability and Smoking Test measures, between Title I and Non-Title I students on the Semantic Differential Health Concepts Scale measure, and between students reading below grade level and those reading at or above grade level on the Locus of Control and Smoking Test measures.

for locating high risk students in the area of preventive health behavior in general and especially in relation to smoking behavior. The findings indicated that the following groups may warrant special attention with education intervention: males in relation to perceived vulnerability to illnesses and accidents and smoking behavior; the Spanish-American students for perceived vulnerability to illness and accidents and for attitudes towards smoking; Title I students on attitudes toward health concepts such as being sick, seeing a doctor, or condition of teeth; and for students' reading below grade level in relation to their locus of control orientation and attitudes toward smoking. These findings also suggest that the male Spanish-American student who is from a low-income family and is reading below grade level needs the most attention with health education intervention which might affect determinants of preventive health attitudes and behavior.

Table 1

Descriptive Data on the Treatment and

Combined Control Groups

	Treatment Group (N=459)		Combined Control Group (N=176)	
	N	%	N	%
Sex				
Female	230	(50.11)	85	(48.30)
Male	229	(49.89)	91	(51.71)
Age				
9	1	(.22)	1	(.57)
10	363	(79.08)	103	(58.52)
11	93	(20.26)	68	(38.64)
12	2	(.44)	2	(1.14)
missing data	0	(0)	2	(1.14)
Ethnic Group				
Anglo	198	(43.14)	84	(47.73)
Black	12	(2.62)	7	(3.98)
Indian	3	(.65)	5	(2.84)
Span./Amer.	210	(45.75)	76	(43.18)
Other	36	(7.84)	4	(2.30)
Income				
Title I	69	(15.03)	42	(23.86)
Non Title I	390	(84.97)	133	(75.57)
missing data	0	(0)	1	(.57)
Reading Level[a]				
Below Grade	182	(39.65)	68	(38.64)
Grade Level or above	250	(54.47)	96	(54.55)
missing data	27	(5.88)	12	(6.82)

[a] Estimated by the teachers.

Table 2

Descriptive Statistics and F Ratios for Treatment and Control Group I on Pretest Scores for All Measures

Measure	Treatment Group N=24 $\bar{X}$	S.D.	Control Group I N=5 $\bar{X}$	S.D.	F
LC	8.23	1.20	6.72	1.97	7.23*
PV	45.58	2.91	45.67	2.52	.02
SD_1	70.20	4.13	66.18	2.34	1.8
SD_2	75.47	4.11	71.80	6.21	1.5
ST	20.59	2.16	22.91	3.12	2.1

*$p < .05$

Table 3

Descriptive Statistics and F Ratios for the Treatment and Combined Control Group on Posttest Means for All Measures

Measure	Treatment Group N=24 $\bar{X}$	S.D.	Combined Control Group N=9 $\bar{X}$	S.D.	F
LC	7.25	.91	7.30	1.38	.01
PV	45.29	3.09	44.36	3.09	.59
SD_1	71.36	2.00	68.59	2.86	9.96*
SD_2	76.61	3.30	74.98	3.21	1.61
ST	17.45	1.62	22.36	3.88	27.10*

*$p < .05$

Table 4

Pretest Rankings for the Treatment Group on the Perceived Vulnerability Measure

Expectancy N=24	$\bar{X}$	Rank[a]	S.D.
Missing a week of school because of sickness	2.28	1	1.26
Accidents (like breaking an arm)	2.34	2	.99
Rash	2.26	3	1.22
Flu	2.70	4	1.20
Having tooth pulled	2.80	5	1.49
Bleeding gums	3.05	6	1.45
Toothache	3.10	7	1.31
Cavity	3.47	8	1.33
Cutting finger	3.59	9	1.31
Fever	3.65	10	1.09
Sore Throat	3.74	11	1.13
Cold	3.88	12	1.07
Headache	3.94	13	1.21
Upset stomach	4.07	14	1.18

[a]The expectancy scores for each item ranged from 1 (lowest) to 5 (highest).

Table 5

Posttest Rankings for the Treatment Group on the Perceived Vulnerability Measure

Expectancy N=24	$\bar{X}$	Rank[a]	S.D.
Missing a week of school because of sickness	2.37	1	1.23
Accident (like breaking an arm)	2.37	2	1.00
Rash	2.55	3	1.18
Having tooth pulled	2.82	4	1.37
Flu	2.87	5	1.89
Toothache	3.14	6	1.36
Bleeding gums	3.24	7	1.47
Cavity	3.41	8	1.31
Cold	3.53	9	1.21
Fever	3.54	10	1.16
Sore throat	3.59	11	1.21
Cutting finger	3.70	12	1.31
Headache	3.91	13	1.20
Upset stomach	4.09	14	1.09

[a] The expectancy scores for each item range from 1 (lowest) to 5 (highest).

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APPENDIX B

GOAL/COMPONENT:

OBJECTIVE/QUESTION:

DATA ELEMENTS	INSTRUMENTATION TITLE DATE GIVEN	SAMPLING	DATA HANDLING	SUPPORT REQUIREMENTS
Pieces of information necessary for the assessment of this item.	*Title or description of each with administration dates*	*Who will be in the sample "tested"?*	*Data collection, reduction, and analysis techniques should be listed.*	*Additional help or services needed.*

ACTIVITY													Person(s)Responsible

SAMPLE MAPPING SHEET - PROJECT PROPOSAL

COMPONENT: _____

NEED: _____

GOAL: _____

OBJECTIVE: _____

_____

ACTIVITIES TO COMPLETE OBJECTIVE:

EVALUATION TO MEASURE OBJECTIVE:

MONTHS OF THE YEAR

TIME LINE	7	8	9	10	11	12	1	2	3	4	5	6

SAMPLE MAPPING SHEET - EVALUATION DESIGN

OBJECTIVE OR QUESTION:

DATA ELEMENTS	INSTRUMENTATION TITLE	INSTRUMENTATION ADMIN	POPULATION SELECTION	DATA HANDLING COLLECTION	DATA HANDLING REDUCTION	DATA ANALYSIS	SUPPORT REQUIREMENTS

TIMELINE:

REPORTING:

ACTIVITY	8	9	10	11	12	1	2	3	4	5	6	7	AUDIENCES	DATE	PERSON RESPONSIBLE

APPENDIX C

MULTIPLE CRITERION MEASURES FOR

EVALUATION OF SCHOOL PROGRAMS*

I. *Indicators of Status or Change in Cognitive and Affective Behaviors of Students in Terms of Standardized Measures and Scales.*

1. Standardized achievement and ability tests, the scores on which allow inferences to be made regarding the extent to which cognitive objectives concerned with knowledge, comprehension, understanding, skills, and applications have been attained.

2. Standardized self inventories designed to yield measures of adjustment, appreciations, attitudes, interests, and temperament from which inferences can be formulated concerning the possession of psychological traits (such as defensiveness, rigidity, aggressiveness, cooperativeness, hostility, and anxiety).

3. Standardized rating scales and check lists for judging the quality of products in visual arts, crafts, shop activities, penmanship, creative writing, exhibits for competitive events, cooking, typing, letter writing, fashion design, and other activities.

II. *Indicators of Status or Change in Cognitive and Affective Behaviors of Students by Informal or Semiformal Teacher-made Instruments or Devices.*

1. Incomplete sentence techniques: categorization of types of responses, enumeration of their frequencies, or rating of their psychological appropriateness relative to specific criteria.

2. Interviews: frequencies and measurable levels of responses to formal and informal questions raised in a face-to-face interrogation.

*Source: Metfessel and Michael (1967).

3. Peer nominations: frequencies of selection or of assignment to leadership roles for which the sociogram technique may be particularly suitable.

4. Questionnaires: frequencies of responses to items in an objective format and numbers of responses to categorized dimensions developed from the content analysis of responses to open-ended questions.

5. Self-concept perceptions: measures of current status and indices of congruence between real self and ideal self--often determined from use of the semantic differential or Q-sort techniques.

6. Self-evaluation measures: student's own reports on his perceived or desired level of achievement, on his perceptions of his personal and social adjustment, and on his future academic and vocational plans.

7. Teacher-devised projective devices such as casting characters in the class play, role playing, and picture interpretation based on an informal scoring model that usually embodies the determination of frequencies of the occurrence of specific behaviors, or ratings of their intensity or quality.

8. Teacher-made achievement tests (objective and essay), the scores on which allow inferences regarding the extent to which specific instructional objectives have been attained.

9. Teacher-made rating scales and check lists for observation of classroom behaviors; performance levels of speech, music, and art; manifestation of creative endeavors, personal and social adjustment, physical well being.

10. Teacher-modified forms (preferably with consultant aid) of the semantic differential scale.

III. *Indicators of Status or Change in Student Behavior Other than Those Measured by Tests, Inventories, and Observation Scales in Relation to the Task of Evaluating Objectives of School Programs.*

1. Absences: full-day, half-day, part-day and other selective indices pertaining to frequency and duration of lack of attendance.

2. Anecdotal records: critical incidents noted including frequencies of behaviors judged to be highly undesirable or highly deserving of commendation.

3. Appointments: frequencies with which they are kept or broken.

4. Articles and stories: numbers and types published in school newspapers, magazines, journals, or proceedings of student organization.

5. Assignments: numbers and types completed with some sort of quality rating or mark attached.

6. Attendance: frequency and duration when attendance is required or considered optional (as in club meetings, special events, or off-campus activities).

7. Autobiographical data: behaviors reported that could be classified and subsequently assigned judgmental values concerning their appropriateness relative to specific objectives concerned with human development.

8. Awards, citations, honors, and related indicators of distinctive or creative performance: frequency of occurrence of judgments of merit in terms of scaled values.

9. Books: numbers checked out of library, numbers renewed, numbers reported read when reading is required or when voluntary.

10. Case histories: critical incidents and other passages reflecting quantifiable categories of behavior.

11. Changes in program or in teacher as requested by student: frequency of occurrence.

12. Choices expressed or carried out: vocational, avocational, and educational (especially in relation to their judged appropriateness

to known physical, intellectual, emotional, social, aesthetic, interest, and other factors).

13. Citations: commendatory in both formal and informal media of communication such as in the newspaper, television, school assembly, classroom, bulletin board, or elsewhere (see Awards).

14. "Contacts": frequency or duration of direct or indirect communications between persons observed and one or more significant others with specific reference to increase or decrease in frequency or to duration relative to selected time intervals.

15. Disciplinary actions taken; frequency and type.

16. Dropouts: numbers of students leaving school before completion of program of studies.

17. Elected positions: numbers and types held in class, student body, or out-of-school social groups.

18. Extracurricular activities: frequency or duration of participation in observable behaviors amenable to classification such as taking part in athletic events, charity drives, cultural activities, and numerous service-related avocational endeavors.

19. Grade placement: the success or lack of success in being promoted or retained; number of times accelerated or skipped.

20. Grade point average: including numbers of recommended units of course work in academic as well as in noncollege preparatory programs.

21. Grouping: frequency and/or duration of moves from one instructional group to another within a given class grade.

22. Homework assignments: punctuality of completion, quantifiable judgments of quality such as class marks.

23. Leisure activities: numbers and types of; times spent in; awards and prizes received in participation.

24. Library card: possessed or not possessed; renewed or not renewed.

25. Load: numbers of units or courses carried by students.

26. Peer group participation: frequency and duration of activity in what are judged to be socially acceptable and socially undesirable behaviors.

27. Performance: awards, citations received; extra credit assignments and associated points earned; numbers of books or other learning materials taken out of the library, products exhibited at competitive events.

28. Recommendations: numbers of and judged levels of favorableness.

29. Recidivism by students: incidents (presence or absence or frequency of occurrence) of a given student's returning to a probationary status, to a detention facility, or to observable behavior patterns judged to be socially undesirable (intoxicated state, dope addiction, hostile acts including arrests, sexual deviation).

30. Referrals: by teacher to counselor, psycologist, or administrator for disciplinary action, for special aid in overcoming learning difficulties, for behavior disorders, for health defects, or for part-time employment activities.

31. Referrals: by student himself (presence, absence, or frequency).

32. Service points: numbers earned.

33. Skills: demonstration of new or increased competencies such as those found in physical education, crafts, homemaking, and the arts that are not measured in a highly valid fashion by available tests and scales.

34. Social mobility: numbers of times student has moved from one neighborhood to another and/or frequency with which parents have changed jobs.

35. Tape recordings: critical incidents contained and other analyzable events amenable to classification and enumeration.

36. Tardiness: frequency of.

37. Transiency: incidents of.

38. Transfers: numbers of students entering school from another school (horizontal move).

39. Withdrawal: numbers of students withdrawing from school or from a special program (see Dropouts).

IV. *Indicators of Status or Change in Cognitive and Affective Behaviors of Teachers and Other School Personnel in Relation to the Evaluation of School Programs.*

1. Articles: frequency and types of articles and written documents prepared by teachers for publication or distribution.

2. Attendance: frequency of, at professional meetings or at inservice training programs, institutes, summer schools, colleges and universities (for advanced training) from which inferences can be drawn regarding the professional person's desire to improve his competence.

3. Elective offices: numbers and types of appointments held in professional and social organizations.

4. Grade point average: earned in postgraduate courses.

5. Load carried by teacher: teacher-pupil or counselor-pupil ratio.

6. Mail: frequency of positive and negative statements in written correspondence about teachers, counselors, administrators, and other personnel.

7. Memberships including elective positions held in professional and community organizations; frequency and duration of association.

8. Model congruence index: determination of how well the actions of professional personnel in a program approximate certain operationally-stated judgmental criteria concerning the qualities of a meritorious program.

9. Moonlighting: frequency of outside jobs and time spent in these activities by teachers or other school personnel.

10. Nominations by peers, students, administrators or parents for outstanding service and/or professional competencies: frequency of.

11. Rating scales and check lists (e.g., graphic rating scales or the semantic differential) of operationally-stated dimensions of teachers' behaviors in the classroom or of administrators' behaviors in the school setting from which observers may formulate inferences regarding changes of behavior that reflect what are judged to be desirable gains in professional competence, skills, attitudes, adjustment, interests, and work efficiency; the perceptions of various members of the total school community (parents, teachers, administrators, counselors, students, and classified employees) of the behaviors of other members may also be obtained and compared.

12. Records and reporting procedures practiced by administrators, counselors and teachers: judgments of adequacy by outside consultants.

13. Termination: frequency of voluntary or involuntary resignation or dismissals of school personnel.

14. Transfers: frequency of requests of teachers to move from one school to another.

V. *Indicators of Community Behaviors in Relation to the Evaluation of School Programs.*

1. Alumni participation: numbers of visitations, extent of involvement in PTA activities,

amount of support of a tangible (financial) or a service nature to a continuing school program or activity.

2. Attendance at special school events, at meetings of the board of education, or at other group activities by parents: frequency of.

3. Conferences of parent-teacher, parent-counselor, parent-administrator sought by parents: frequency of request.

4. Conferences of the same type sought and initiated by school personnel: frequency of requests and record of appointments kept by parents.

5. Interview responses amenable to classification and quantification.

6. Letters (mail): frequency of requests for information, materials, and servicing.

7. Letters: frequency of praiseworthy or critical comments about school programs and services and about personnel participating in them.

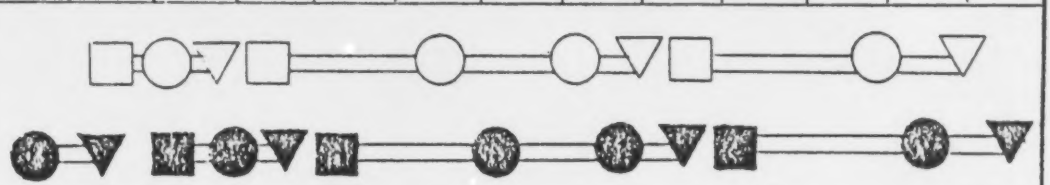
8. Participant analysis of alumni: determination of locale of graduates, occupation, affiliation with particular institutions, or outside agencies.

9. Parental response to letters and report cards upon written or oral request by school personnel: frequency of compliance by parents.

10. Telephone calls from parents, alumni, and from personnel in communications media (e.g., newspaper reports): frequency, duration, and quantifiable judgments about statements monitored from telephone conversations.

11. Transportation requests: frequency of.

APPENDIX D

SCHEDULED ITEMS	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL
Evaluation Activities and Reports Audit Activities and Reports													
Audit Phases Audit Phases	Pre-Audit Report		Implementation Report		Interim Report					Final Report			
Audit Personnel + Mandays	2 + 10		3 + 15		5 + 15					3 + 15			

Legend: □ =Data Gathering
○ =Data Analysis
▽ =Data Reporting

SAMPLE OF PERT

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